REMARKS

Applicants thank Examiner for his allowance of claims 1 and 2. Applicants respectfully point out that three claims are pending in this application. Original claim 3 has not been canceled, but was omitted from the office action. Applicants request allowance of claim 3.

Claim Objections

Claims 1 and 2 have been objected to for not clearly defining the variables. Applicants respectfully point out that the variables are defined in both the claims and the specification. In particular, claim 1 includes two variables, *m* and *n*. The variable *m* is defined in claim 1 as the number of bits in a lower order gain control signal. *See e.g.* page 14, line 14. This definition is consistent with the specification. *See e.g.* page 5, lines 24-26. The variable *n* is defined in claim 2 as number of bits in a higher order gain control signal. *See e.g.* page 14, line 17. This definition is also consistent with the specification. *See e.g.* page 5, lines 24-26.

Claim 2 includes the following variables: *m*, *n*, *x*, *y*, *C*, *Cs*, *Cf*, *p*, *q*, *G*, *Code*, *A*, and *B*. The variables *m* and *n* are defined the same as with respect to claim 1. The variable *x* represents the decimal number notation of the control data of higher order *n* bits. *See e.g.* page 15, lines 20-21 and page 6, lines 34-35. The variable *y* represents the decimal number notation of the control data of lower order *m* bits. *See e.g.* page 15, lines 21-22 and page 6, lines 35-36. Claim 2 defines *C* as standing for one unit capacitance of the capacitor string. *See e.g.* page 15, line 14. The variable *Cs* is defined in claim 2 and the specification as the capacitance of the input fixed capacitor and is equal to: (A · C). *See e.g.* page 15, lines 14-15 and page 5, lines 27-30. The variable *Cf* is defined in claim 2 and the specification as the capacitance of the feedback loop fixed capacitor and is equal to: (B · C). *See e.g.* page 15, lines 15-16 and page 5, 30-32.

As stated in claim 2, the coefficients *p* and *q* are used in approximating gain control characteristics to approximate Linear-in-db characteristics. *See e.g.* page 15, lines 23-26. They are represented by formulas (5) and (6) on page 6, lines 7-8 and 10-11 respectively:

$p = A \cdot (2^{2m+n} \cdot Gmid \cdot Gmax + (2^{2m+n} - 2^{1+m}) \cdot Gmid \cdot Gmin - (2^{(1+2m+n)} - 2^{1+m}) \cdot Gmax \cdot Gmin) / (Gmin \cdot (Gmid - Gmax) \cdot (-4^{m+n} + 32^{m+n} - 2))$;

$q = A \cdot (2^{2m+n} \cdot Gmin - 2^{2m+n+1} \cdot Gmid + 2^{2m+n} \cdot Gmax + 2^{1+m} \cdot Gmid - 2^{1+m} \cdot Gmax) / (Gmin \cdot (Gmid - Gmax) \cdot (-4^{m+n} + 32^{m+n} - 2))$.

The variable *G* represents a gain associated with the gain control signal *Code*. The formula defining G is found both in claim 2, page 15, line 31 and in formula (7) on page 6, line

16 of the specification: $G = (2^m \cdot Cs/p + Code \cdot C) / (2^m \cdot Cf/p + (2^{m+n} - 1 - q \cdot Code) \cdot C/p)$. The variable *Code* is the decimal number notation for the gain control signal. The formula defining Code is found both in claim 2, page 15, line 22 and in formula (9) on page 7, line 2 of the specification: $Code = 2^m \cdot x + y$.

The remaining variables A and B are defined generally in claim 2 as coefficients for determining capacitance. *See e.g.* page 15, lines 14-16. Formula (3) on page 5, line 35 and formula (4) on page 5, line 37 in the specification further define A and B, respectively, as follows:

$A = Gmin \cdot (Gmax + 1) \cdot (2^{-m}-2^n)/(Gmin - Gmax)$;

$B = (2^{-m}-2^n) \cdot (Gmin + 1)/(Gmin - Gmax)$.

Claim 2 further includes the terms *Gmax*, *Gmin*, *Gmid*. Even if *Gmax*, *Gmin*, and *Gmid* can be considered variables, a point that applicants do not concede, they are defined in claim 2 and the specification. *Gmax* is the maximum value of a gain that can be controlled with a control signal of $(m+n)$ bits. *See e.g.* page 15, lines 17 and page 5, lines 24-27. *Gmin* is the minimum value of a gain that can be controlled with a control signal of $(m+n)$ bits. *See e.g. id.* *Gmid* is an intermediate value of a gain controlled with the gain control signal of $(m+n)$ bits. *See e.g.* page 15, lines 18-20 and page 6, lines 1-2.

If the Examiner believes a telephone conference would be helpful, the Examiner is invited to telephone the undersigned at the below-listed telephone number.

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